AN UNUSUAL INTERACTION BETWEEN A BANDED HAIRSTREAK BUTTERFLY *SATYRIUM CALANUS* (LYCAENIDAE) AND A STINK BUG *BANASA DIMIATA* (PENTATOMIDAE)[1]

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ABSTRACT: An unusual interaction between a male banded hairstreak butterfly (*Satyrium calanus*) and a female stink bug (*Banasa dimiata*)[3] is reported and illustrated. The interaction involved the butterfly rubbing its hindwings on the dorsal surface of the stink bug. The interaction may be related to an accidental encounter or to a chemical exchange from the stink bug to the butterfly.

On 14 June, 2001 an unusual interaction between a male banded hairstreak butterfly (*Satyrium calanus* Hübner) and a female stink bug (*Banasa dimiata* Say) was observed and photographed in East Brunswick Township, Middlesex County, New Jersey (Figure 1). I am unaware of any reports of interactions between these two taxa. The interaction involved the butterfly rubbing its hindwings on the dorsal surface of the stink bug. During the entire encounter there did not appear to be any aggressive behavior from either species. The actions of the butterfly and the stink bug are not consistent with reported courtship, mating, or aggressive behaviors of butterflies (Rutowski 1997, 1998) or Pentatomidae (McPherson 1982). The interaction may be related to accidental contact associated with normal orienting behavior and perching posture of the hairstreak (p. comm. anonymous) or to a chemical exchange from the stink bug to the butterfly.

The interaction occurred at about 0930h, about one meter above the ground, on a leaf of a highbush blueberry (*Vaccinium corymbosum* L.). The shrub was located at the edge of a mixed oak woodland bordering an early successional field. The observations began when *S. calanus* landed on a leaf occupied by *B. dimiata*. The butterfly landed about one centimeter behind the stink bug, oriented perpendicular to the long axis of the stink bug. After a few seconds, the butterfly walked sideways toward the stink bug until the extreme posterior portion of its hind wing, near the lowest anal eyespot, was in contact with the extreme posterior portion of the stink bug. The butterfly then moved backwards, rubbing the hind wing across the dorsal side of the stink bug until ending this movement near the metathoracic section of the stink bug. These movements took a few seconds. The butterfly then remained still for another second or two before flying off. The butterfly perched for about thirty seconds on

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[3] The spelling of the specific *"diamata"* by Say (1832) is undoubtedly a misspelling of *"dimidiata"*.

Figure 1. *S. calanus* landing on a leaf occupied by *B. dimiata* (A&C) and rubbing its hindwings across the dorsal surface of *B. dimiata* (B&D).

another nearby leaf on the same shrub, before returning to the leaf occupied by the stink bug, and repeating the same movements. It then flew off to another nearby leaf on the same shrub and did not return to the leaf occupied by the stink bug during another five minutes of observation. The stink bug was then collected for later identification. During the observations the stink bug did not appear to move although the photographs taken at the time suggest that it may have slightly raised its abdomen toward the butterfly wing. Whether this is an artifact of slightly varying angles of the photography or an actual occurrence is unclear.

Pentatomidae secrete copious quantities of chemicals from metathoracic glands (Aldrich 1988, Schuh 1995) and these secretions are likely transferred to the entire body surface by the insect (p. comm. F. Carle, Rutgers University, New Brunswick, NJ). The contact between *S. calanus* and *B. dimiata* terminated on the dorsal surface near the stink bug's metathoracic glands, where residual chemical secretions would likely be elevated. It is possible that the butterfly was attempting to transfer chemicals to its wings from the stink bug. The secretions of the Pentatomidae are believed to serve a variety of functions that could be beneficial to the butterfly including mimicking ant attack allomones that cause ants to repel parasitic intruders or ant brood pheromones that reduce the likelihood of an attack upon the emitter (Aldrich 1988, Fiedler et al. 1996, McBrien and Millar 1999, McPherson 1982). These pheromones may provide other benefits as well, including increasing unpalatability and antibiotic functions (Aldrich 1988, Blum 1985).

Male *S. calanus* commonly perch on shrubs and trees and wait for females to fly by, often for long periods of time (Clench 1955, Howe 1975). These perches are in elevated, open locations that offer little protection from ants. Adult females, and possibly males as well, of some Lycaenidae have also been reported to seek out host plants with ants present (Douglas 1986). Ants have a well-developed attack response to intruders and adult butterflies venturing onto these plants would likely be exposed to attack unless some type of chemical signal is provided. Chemical protection is apparently lacking or poorly developed in Lycaenidae adults (Brower 1989, Fiedler et al. 1996) and obtaining them from other sources could circumvent these attacks.

This observation may be related to an accidental encounter or to a possible unsuspected relationship between *S. calanus* and *B. dimiata* that may involve chemical exchange.

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